

Occupational Projections and Training Data

2002-03
Edition



U.S. Department of Labor
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January 2002

Bulletin 2542

Chapter IV. Estimating Occupational Replacement Needs

Information about projected job openings by occupation—openings resulting from employment growth or the need to replace workers who leave an occupation—has many important applications. For example, students and vocational counselors use this information to make career choice decisions; planners of training programs use it to develop education policies; and personnel specialists use it to plan their recruiting efforts. The Bureau of Labor Statistics (BLS) has provided information on employment growth biennially through its occupational outlook program for more than 50 years and, in 1992, resumed estimating job openings resulting from replacement needs.

After completing a comprehensive research effort, BLS researchers concluded that two definitions and two estimates of separations were needed to provide appropriate replacement needs information for different users. The first type of estimate, *total separations*, measures all individuals who leave their occupation. The second, *net separations*, measures the net movements of new and experienced workers into and out of occupations. As discussed below, both measures of separations use data from the Current Population Survey (CPS). After developing historical total and net separation rates, BLS calculates projected total and net replacement rates. The projected total and net replacement rates are used to estimate future total and net replacement needs for each occupation in the employment matrix.

Concepts and definitions

During the past several decades, a variety of concepts have been used to calculate estimates of occupational replacement needs and job openings. These different concepts result in significantly different estimates of separations for the same occupation that often have confused users of the information. This section briefly summarizes the concepts currently used by BLS to calculate replacement needs data. Figure 1 illustrates the differences between total and net separations.

Total separations. Total separations identify the flow of individuals leaving an occupation, for any reason whatsoever, without regard to persons entering the occupation. Total separations are the larger measure of separations. During a given period, individuals may leave an occupation for a variety of reasons, and must be replaced. Some become employed in a different occupation as a result of a promotion, a desire to change careers, the loss of an existing job, the need for a different job while attending school or training or caring for family, or some other reason. Others

who leave an occupation stop working altogether because they retire, desire more time for leisure or for an extended vacation, assume family responsibilities, return to school, move out of the geographic area, or become ill, or for some other reason. If employment in an occupation is to increase or remain the same, those individuals who left the occupation must be replaced. In most cases, total occupational separations are thus replacement needs and a source of job openings. If employment is declining, however, occupational separations exceed replacement needs by the amount of decline in employment because some persons who leave the occupation are not replaced. (Individuals who change employers but remain employed in the same occupation—events often referred to as “turnover”—are not included in counts of replacement needs because job changes by these individuals have no impact on the number of openings for persons wishing to enter an occupation.)

Net separations. Net separations summarize movements of workers into and out of an occupation over a specific period. If employment is not declining, net separations approximate the number of persons who permanently leave an occupation: they quantify the need for new entrants and, if training is required, identify minimum training requirements.

Employment data, by age, for two points in time are used to estimate net separations. For example, occupational employment, by age, is prepared for a base year and for a second year 5 years later. Employment figures for each age group in the base year are then compared with employment figures for the group that is 5 years older. For example, in a given occupation, employment in the base year for the 55- to 59-year-old group is compared with employment in the second year for the 60- to 64-year-old group. If employment has increased from the base-year group to the older, second-year group, then the increase measures net entrants into the occupation for the second-year group, and net separations from the occupation for that group are zero. If, instead, employment has declined across the two groups, the decline is recorded as net separations from that occupation for the second age group. The total net separations from the occupation in question are then the sum of the net separations from that occupation for all age groups.

It is important to note that, within any age group, individuals may have done any of the following to stop being included in employment data for the area: Left the occupation and started working in another occupation, stopped

working altogether, or left the region. Similarly, individuals entering the occupation in an area may have been working in another occupation, may not have been working at all, or may have come from another region. The change measured over the period in question thus reveals only whether there were more or fewer entrants than separations, and tells nothing about the numbers of total entrants, total separations, or any of their components. That is, the change indicates whether the size of the original age group increased or decreased, but it indicates nothing about the specific actions of individuals making up the group.

Replacement needs. In developing estimates of replacement needs, the distinction between total and net separations and replacement needs pertaining to an occupation must not be overlooked. When employment in an occupation remains the same or increases over a given period, replacement needs equal separations. Conversely, when employment declines, replacement needs are less than separations because some individuals leaving an occupation are not replaced.

During a period when employment in an occupation declines, total separations will be greater than they would be if employment were increasing because more individuals lose their jobs. Net separations would be greater not only because more individuals leave, but also because fewer enter the occupation. A decline in employment represents individuals who left an occupation and were not replaced; therefore, replacement needs during a time of declining employment are determined by reducing observed separations by the decline in employment.

Although it is conceptually possible that employment could decline to zero, the possibility is remote, especially with national data. In such an unlikely scenario, separations would equal the previous number of employees because all lost their jobs, and replacement needs would be zero (replacement needs = separations - employment decline = 0). During periods of employment decline, displaced workers are available to reenter the occupation later, and thus may reduce the need to train additional workers.

Developing measures of total separations

All individuals who leave an occupation—those who transfer to another occupation or who stop working for any reason—must be included in a measure of total separations. Producing such a measure requires longitudinal data that include information about individuals at two points in time. During the late 1970s, BLS researchers developed a procedure for using CPS data to estimate the total number of job openings arising from workers who leave their occupation between two points in time that are 1 year apart. Annual data are preferable to data with other periodicities because most data on training program completions are compiled on an annual basis. Annual total separation data thus facilitate analyses of occupational supply and demand.

The method of measuring total separations entailed using computer records to track the same individuals in the

CPS over a 1-year period. Matched data, from August 1998 to August 1999 through July 1999 to July 2000, were created for each of the 12 months and were combined. Use of data from the matched sample permitted changes in an individual's employment status and occupation to be tabulated. Next, the matched data dealing with changes in labor force status were merged with data on February 1999-2000 occupational transfers that were collected in the February 2000 CPS supplement.

An excessively large estimate of occupational transfers in matched CPS data occurs because, over time individuals may respond differently to the same CPS question about their occupation, responses may be recorded differently by interviewers collecting the data, or recorded information may be interpreted and coded differently by persons preparing files for computer processing. All these actions result in a different occupation being recorded in the second year when, in fact, no change of occupation occurred.

Combining 1999-2000 matched CPS data and occupational transfer data from the February 2000 CPS yields *merged data* that provide a composite description of movements into, out of, and between occupations over two points that are 1 year apart. The resulting merged data identify the numbers and types of separations and the characteristics of workers who change occupations, become unemployed, or leave the labor force.

Total separations data for occupations with fewer than 50,000 employees in 2000 were judged unreliable because of the limited number of observations in the sample. Data for the remaining occupations were examined individually and, if data identifying specific reasons for leaving the occupation appeared suspect, another detailed occupational group was selected to serve as a proxy and provide substitute data.

The CPS is conducted primarily to obtain current data on the labor force status of individuals, rather than data that measure changes over time. As a result, there are significant limitations to the data that describe change. The CPS is a household survey that collects data from persons living at specific addresses. One limitation to the matched sample is that information can be developed only from the responses of individuals who do not change their residence. Movers tend to change their labor force status more than do non-movers; hence, the separation rates are biased downward because movers are not included. Separation rates also are biased downward because the CPS excludes individuals who die between surveys.

By contrast, response and coding errors bias the separation rates upward. For example, if employed persons were incorrectly classified as not being in the labor force during the second survey, the matched data would indicate movement where none occurred. Although the net effect of the various biases on the movements is not known, their various impacts are offsetting and not concentrated by occupation.

It must be emphasized that total separation rates developed from merged CPS data are not measured rates based on

longitudinal data about individuals, but rather are a composite estimate of movements from occupations based on CPS data from two distinct sources. However, the rates are occupation-specific and are extremely valuable for describing the labor market.

Developing measures of net separations

Changes in age groups over a 5-year period provide a comprehensive measure of occupation-specific net separations. When the size of a group increases, a measure of net entrants is recorded; when it declines, net separations are identified. Net changes in an age group capture the net effect of transfers into and out of occupations, immigration, and emigration, as well as labor force entries and separations, including deaths. A 5-year period was chosen so as to reduce the impact of cyclical variations that might affect comparisons made over a shorter period. Estimates for other periods can be developed, however. Estimates also can be developed for industry, educational level, sex, and a variety of other demographic variables. This new "cohort" technique thus becomes a powerful tool for analyzing labor market changes.

Employment estimates for appropriate age groups, by occupation, were developed for 1992-97, 1993-98, 1994-99, and 1995-2000. Initially, several hundred thousand records containing information on occupation, age, and many other characteristics for all employed persons in 1992 were combined, and occupational employment by age group was tabulated. The process was repeated to obtain estimates for desired age groups in 1997. To increase the sample size and reduce cyclical fluctuations, estimates for the age groups for which 1992 employment was tabulated also were developed for 1993, 1994, and 1995, and estimates for the age groups used in 1997 were developed for 1998, 1999, and 2000. Data on employment by occupation, by age group, were then averaged and used to prepare the estimates presented in this chapter. To simplify the presenta-

Table 7. Net separations for registered nurses and for waiters and waitresses, by age group, 1995-2000

(Numbers in thousands)

1995 employment ¹		2000 employment ²		Net Change, 1995-2000	Net separations, 1995-2000	Separation rate, 1995-2000 (percent)
Age	Number	Age	Number			
Registered nurses						
16-99.....	1,902	—	2,088	186	140	7.4
		16-20	1	1		
16-19.....	1	21-24	59	58	0	0
20-24.....	67	25-29	207	140	0	0
25-29.....	204	30-34	266	62	0	0
30-34.....	296	35-39	327	31	0	0
35-39.....	377	40-44	411	34	0	0
40-44.....	343	45-49	341	-3	3	0.8
45-49.....	249	50-54	225	-24	24	9.5
50-54.....	173	55-59	142	-32	32	18.2
55-59.....	108	60-64	73	-35	35	32.2
60-64.....	59	65-69	24	-35	35	59.1
65-69.....	18	70-74	9	-8	8	48.3
70-74.....	5	75-79	2	-3	3	58.3
75-99.....	2	80-99	1	-1	1	34.6
Waiters and waitresses						
16-99.....	1,414	—	1,411	-3	451	31.9
		16-20	393	393		
16-19.....	237	21-24	292	55	0	0
20-24.....	412	25-29	205	-208	208	50.3
25-29.....	213	30-34	136	-78	78	36.4
30-34.....	181	35-39	130	-51	51	28.3
35-39.....	138	40-44	93	-45	45	32.4
40-44.....	78	45-49	59	-19	19	24.5
45-49.....	55	50-54	43	-12	12	21.6
50-54.....	42	55-59	24	-17	17	41.6
55-59.....	25	60-64	20	-5	5	19.6
60-64.....	21	65-69	10	-11	11	53.0
65-69.....	9	70-74	5	-4	4	46.4
70-74.....	2	75-79	1	0	0	25.0
75-99.....	2	80-99	1	-1	1	47.3

¹ 1995 data are averages of 1992, 1993, 1994, and 1995.

² 2000 data are averages of 1997, 1998, 1999, and 2000.

tion, all references to 1995 data represent averages for 1992, 1993, 1994, and 1995, and references to 2000 data represent averages for 1997, 1998, 1999, and 2000.

In most occupations, net leavers occur only in the older age groups, usually above age 45. This pattern typically describes individuals leaving in large numbers to retire. A different pattern displayed in some occupations is the vast majority of all net separations taking place in the youngest age groups. In this case, large numbers of workers probably obtained employment in the occupation when they first entered the workforce. When they were ready to begin full-time jobs, or when they qualified for higher paying jobs, they transferred to another occupation. In both patterns, the net separations quantify the number of persons who permanently left the occupation. Table 7 shows these different patterns, and also illustrates how net separations for registered nurses and for waiters and waitresses were calculated.

Table 8. Net separations in selected teaching occupations, by age group, 1995-2000

(Numbers in thousands)

Current Population Survey occupation	Number employed, 1995 ¹	Age group													
		16 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 to 44	45 to 49	50 to 54	55 to 59	60 to 64	65 to 69	70 to 74	75 to 79	
Teachers, except college and university.....	4,211	0	0	0	0	0	0	39	85	98	66	22	6	7	
Teachers, prekindergarten and kindergarten..	478	0	0	0	0	0	7	5	0	5	5	2	1	1	
Teachers, elementary school.....	1,636	0	0	0	0	0	0	19	44	43	29	7	1	2	
Teachers, secondary school.....	1,178	0	0	0	0	0	3	26	46	39	21	5	1	1	
Teachers, special education.....	274	0	0	0	0	0	0	0	2	4	3	1	0	0	
Teachers, n.e.c. ²	646	0	0	0	0	0	0	0	0	7	9	8	3	2	

¹ 1995 data are averages of 1992, 1993, 1994, and 1995.² n.e.c. = not elsewhere classified.

In table 7, employment data by age group for registered nurses and for waiters and waitresses in 1995 are compared with corresponding data for a 5-year-older group in 2000. For example, the number of registered nurses aged 20 to 24 in 1995 is compared with the number of registered nurses aged 25 to 29 in 2000, and the difference is calculated. If the difference is positive, more individuals aged 20 to 24 in 1995 entered than left the occupation. Nothing is known about the numbers of persons transferring into the occupation, entering the labor force, immigrating from another country, transferring out of the occupation, leaving the labor force, or leaving the United States. The difference between the two groups simply identifies the amount by which total entrants exceed total leavers. If, by contrast, the difference is negative, more individuals left than entered the occupation. Only a negative difference results in a measure of net separations. Positive differences are recorded as zero net separations for the age group. The separation rate for an age group is calculated by dividing net separations by 1995 employment in the age group. Net separations for all age groups were totaled and divided by total employment in 1995 to obtain the 5-year net separation rate for the occupation.

Table 7 also presents information on the percentage of leavers in each age group for registered nurses and for waiters and waitresses. This measure is calculated by dividing net leavers in the age group by 1995 employment for that age group. Information about the percentage of leavers in each age group is valuable because it permits estimates of net leavers in the future, which will be discussed later.

Because registered nurses and waiters and waitresses are large occupations, the CPS sample provides quite reliable employment data for each age group within them. However, for small occupations, such as actuaries, the sample is too small and the net separation data are unreliable. For example, actuaries have an irregular distribution of net separations among the age groups, and the net separation rate of about 19 percent is inconsistent with rates for other professional and related occupations.

To obtain a separation rate for each detailed CPS occupation, one of two procedures was used when data for an occupation were judged to be unreliable. When a larger detailed occupation had characteristics similar to those of the

occupation in question, the larger occupation was chosen as a proxy, and the separation and employment data for the proxy occupation were substituted for the unreliable data and were used to calculate separation rates. When there was no larger detailed occupation with characteristics similar to those of the occupation in question, separation and employment data for a summary occupation group were substituted for the unreliable data.

The procedure for determining separation rates for summary occupations, however, was not as straightforward as that for detailed occupations. Note that, in table 8, no net separations are measured for the summary occupation group, teachers, except college and university, until age 45. Yet, two of the detailed occupations that make up the group, prekindergarten and kindergarten and secondary schoolteachers, exhibit net separations prior to that age. The summary occupation does not register those separations because total net entrants in the other detailed occupations—elementary, special education, and not elsewhere covered teachers—exceeded the total of net separations among prekindergarten and kindergarten and secondary schoolteachers. To exclude the measure of net separations from the summary occupation, however, would result in an understatement of separations from detailed occupations. To overcome this limitation, net separations in each age group for summary occupations were calculated by totaling the net separations for each detailed occupation in that age group. Thus, the net separation data for each age group for the summary occupation group, teachers, except college and university, in table 9 is the sum of the data measured for prekindergarten and kindergarten, elementary, secondary, special education, and not elsewhere covered teachers. (Because unrounded data are used, the totals shown may not be the sum of the data for detailed occupations.)

Projected replacement rates

Thus far, all information presented about separations has been descriptive and retrospective; that is, it has described what occurred in the past. The BLS employment projections program, however, focuses on future opportunities, a purpose that requires projections of employment change and, in addition, projections of replacement needs due to total and net separations.

Table 9. Net separations in selected teaching occupations, adjusted summary occupation, by age group, 1995-2000
(Numbers in thousands)

Current Population Survey Occupation	Number employed, 1995 ¹	Age group													
		16 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 to 44	45 to 49	50 to 54	55 to 59	60 to 64	65 to 69	70 to 74	75 to 79	
Teachers, except college and university.....	4,211	0	0	0	0	0	10	51	92	98	66	22	6	7	
Teachers, prekindergarten and kindergarten..	478	0	0	0	0	0	7	5	0	5	5	2	1	1	
Teachers, elementary school.....	1,636	0	0	0	0	0	0	19	44	43	29	7	1	2	
Teachers, secondary school.....	1,178	0	0	0	0	0	3	26	46	39	21	5	1	1	
Teachers, special education.....	274	0	0	0	0	0	0	0	2	4	3	1	0	0	
Teachers, n.e.c. ²	646	0	0	0	0	0	0	0	0	7	9	8	3	2	

¹ 1995 data are averages of 1992, 1993, 1994, and 1995.

² n.e.c. = not elsewhere classified.

Total replacement rates. Total separation rates for all detailed occupations were developed from merged CPS data for the period 1999-2000. As described earlier, total separation rates from proxy occupations were substituted for those for small occupations when the latter data appeared unreliable. If employment in the occupation in question remained the same or increased from 1999 to 2000, the 1999-2000 total separation rate also was the replacement rate and should be used to estimate replacement needs during a projection period. However, if employment declined, the replacement rate was calculated by subtracting the employment decline from the separations. Total replacement rates were used without adjustment for the 2000-10 projection period. Employment for 2005, the midpoint of the projection period, was multiplied by the annual average replacement rates for the 1999-2000 period to project annual average replacement needs over the period 2000-10. Although labor market conditions affect the replacement rates, attempts to adjust the rates would be fraught with difficulties because not enough is known about how cyclical factors and other labor market conditions affect the rates.

Net replacement rates. To develop a net separation rate for an occupation, employment figures for that occupation in a given age group in 1995 were compared with employment in the occupation in 2000 for a group that was 5 years older. (As noted earlier, data for 1995 actually consist of the average of data for 1992, 1993, 1994, and 1995, and data for 2000 consist of the average for 1997, 1998, 1999, and 2000.) If employment for the group increased, no net separations occurred, and separations were recorded as zero. If employment declined, the number was recorded as net separations for that age group. The 5-year net separation rate for the age group was calculated by dividing the number of net separations by employment in 1995. (See table 7.) The 5-year net separation rates for 1995-2000 for each age group could then be applied to employment in future years to obtain a projection of net separations. Excluded from these projections are the replacement needs attributable to those entering the occupation within the projection period.

Between 1995 and 2000, employment in most occupations increased or remained the same. It should also be

noted that the 1995-2000 net separation rates, by age, were used without adjustment to estimate replacement needs during the projection period. If employment declined, however, one of several adjustments to the age-specific separation rates was used to obtain a replacement rate that reduced the occupational separation rate by the rate of decline in employment. When the employment decline was less than the number of net separations among persons aged 16 to 49 in 1995, the number of net separations for that age group was reduced by the employment decline. The decline was distributed in proportion to the number of net separations in each age subgroup of the group aged 16 to 49. This technique was the one most frequently used; it confines the adjustments to the ages most affected by adverse economic conditions. Older workers are more likely to remain employed until they retire. In most of the remaining cases, the net separations were reduced in a like fashion for persons aged 16 to 54 or persons aged 16 to 65, depending on the distribution of net separations in the occupation and the amount by which employment declined. Then, the adjusted age-specific rates were used to calculate future net replacement needs for persons employed in 2000.

Showing data for the persons employed as registered nurses in 2000, table 10 illustrates the method for calculating net leavers over the period 2000-10. First, net leavers were calculated for 2000-2005 by multiplying 2000 employment obtained from the CPS for each age group by the replacement rate in 1995-2000 for the same age group. Before net leavers in 2005-10 were calculated, employment in 2005 for each age group was estimated by identifying employment in 2000 for a 5-year-younger age group and subtracting any projected net leavers for the period 2000-2005. For example, table 10 shows the 2005 employment figure for registered nurses aged 55 to 59 to be 184,000. This estimate was arrived at by identifying the 2000 employment figure for nurses aged 50 to 54 (225,000) and subtracting the 41,000 net leavers in 2000-2005 from that age group (discrepancies due to rounding). When employment for each age group for 2005 was developed, the resulting figure was multiplied by the replacement rate for that age group to estimate net leavers for 2005-10. Summing the number of net leavers for each of the 5-year groups provided an estimate of net leavers for the 10-year period 2000-10. Net

leavers over the 10-year projection period 2000-10 were determined by combining estimates for the 5-year periods 2000-2005 and 2005-10. Dividing the net separations for 2000-10 by 10 yielded annual average net separations, which were then divided by 2000 employment to yield an annual average net separation rate.

New entrants—individuals who were younger than age 16 in 2000 but who can be expected to join the group of employed persons after 2000—are not included in the estimate of separations for 2000-10. If they were included, estimates of separations with net transfers in the younger age groups—such as those for waiters and waitresses—would be larger.

Replacement rates based on the Occupational Employment Statistics survey

The preceding sections described procedures for estimating annual average replacement rates of total and net separations for detailed CPS occupations. To estimate current and projected occupational employment, the BLS projections program uses an employment matrix that is based primarily on data from the Occupational Employment Statistics (OES) survey. The current and projected occupational employment estimates are used to calculate the employment change component of projected job openings. To obtain the replacement needs components of projected total and net job openings, estimates of total and net separations based on the OES survey had to be developed. The procedure required use of total and net separation rates for all detailed occupations based on the OES survey. These rates were developed by (1) iden-

Table 10. Net replacement data for registered nurses, by age group, 2000-10

(Numbers in thousands)

Age	2000 employment ¹		Net replacement needs, 2000-2005	2005 employment	Net replacement needs, 2005-10
	Number	Replacement rate, 1995-2000 (percent)		Number	
16-99.....	2,088	7.4	183	—	235
16-19....	1	0	0	0	0
20-24....	59	0	0	1	0
25-29....	207	0	0	59	0
30-34....	266	0	0	207	0
35-39....	327	0	0	266	0
40-44....	411	0.8	3	327	3
45-49....	341	9.5	32	398	38
50-54....	225	18.2	41	308	56
55-59....	142	32.2	46	184	59
60-64....	73	59.1	43	96	57
65-69....	24	48.3	12	30	14
70-74....	9	58.3	5	12	7
75-99....	3	34.6	1	4	1

¹ 2000 data are averages of 1997, 1998, 1999, and 2000.

tifying the CPS occupation or occupations that are equivalent to the detailed OES survey-based occupation, and (2) either using the CPS rate directly or calculating a weighted rate, using OES or CPS employment figures as weights, if the occupation consisted of more than one OES or CPS occupation. Table 11 presents 2000-10 total and net replacement rates for 2000 OES-based matrix occupations and shows 2000-10 annual average total and net replacement needs. Information identifying OES occupations for which CPS equivalent occupational data were replaced with that of a proxy CPS occupation is available from the Division of Occupational Outlook at (202) 691-5703.

Frequently asked questions about replacement data

Q. Why does BLS compute estimates of both total and net replacement needs data?

A. A single estimate is not appropriate for all purposes. Vocational guidance counseling, for example, requires information about growth and replacement needs that quantifies all opportunities in the labor market. However, training program planning is better served with information about opportunities for new entrants. Thus, two different estimates are provided.

Q. Why is the estimate of growth and net replacement needs described as providing a minimum measure of training needs?

A. In the younger age groups, more individuals are entering than leaving the occupation, and the measure of net separations for that age group is zero. A trained person who dies may require a replacement, but would not be included in net replacement needs estimates. More significantly, not all persons completing training enter the occupation for which they qualify. As a result, more workers must be trained to ensure that the minimum number enter the occupation.

Q. Do the 2000-10 projected net replacement rates assume that future labor market behavior will not change from past patterns?

A. Yes, 1995-2000 occupation- and age-specific rates are used in calculating the projected rates. The 1995-2000 rates are applied to projected occupational age-distribution data. The result is an occupation-specific replacement rate that captures the impact of demographic, but not behavioral, changes.

Q. Are total and net separation rates the same as total and net replacement needs?

A. In most occupations, yes. If employment declines during the period being examined, however, separations will exceed replacement needs by the employment decline. When employment is declining, not all persons separating from the occupation are replaced.

Q. Should a projected decline in employment be subtracted from replacement needs to estimate job opportunities?

A. No! If employment declines, the number of opportunities resulting from growth is zero, with replacement needs constituting the only source. When employment declines, separations increase both because individuals are losing their jobs and, in the case of net separations, because fewer are entering the occupation. Replacement needs—calculated by reducing separations by any decline in employment—should not be further reduced by projected employment declines.

Q. If employment is declining rapidly, is it possible for replacement needs to be zero?

A. In the extreme case, yes. For example, assume that, in a limited geographic area, a single firm is the sole employer of tool and die makers. If the firm ceases operations, all tool and die makers in the area will leave the occupation; separations will equal the decline in employment and there are no replacement needs. An analogous situation, though possible, is unlikely to occur at the national level because not all areas of the country share the same market conditions.

Table 11. Total and net replacement rates and annual average replacement needs, 2000-10

(Numbers in thousands)

2000 Matrix occupation	Total employment, 2000	Replacement rate (Percent)			Annual average replacement needs, 2000-10	
		Total, 1999-2000	Net, 2000-10		Total	Net
			Annual average	10-year		
Total, all occupations	145,594	14.3	2.4	23.7	20,858	3,453
Management, business, and financial occupations	15,519	9.9	1.7	17.0	1,544	265
Management occupations	10,564	9.8	1.6	16.3	1,032	172
Administrative services managers	362	8.5	1.6	16.3	31	6
Advertising, marketing, promotions, public relations, and sales managers	707	6.4	1.4	14.4	45	10
Advertising and promotions managers	100	6.5	1.4	14.3	7	1
Marketing and sales managers	533	6.1	1.4	14.4	32	8
Marketing managers	190	6.1	1.4	14.4	12	3
Sales managers	343	6.1	1.4	14.3	21	5
Public relations managers	74	9.0	1.5	15.3	7	1
Agricultural managers	1,462	10.9	0.6	6.4	159	9
Farm, ranch, and other agricultural managers ¹	169	8.5	1.1	11.5	14	2
Farmers and ranchers ¹	1,294	11.3	0.6	5.7	146	7
Chief executives	547	8.7	3.1	31.4	48	17
Computer and information systems managers	313	9.0	1.7	16.9	28	5
Construction managers	308	8.5	1.6	16.3	26	5
Education administrators	453	7.7	2.6	25.9	35	12
Engineering managers	282	8.5	1.6	16.3	24	5
Financial managers	658	8.1	1.5	15.3	53	10
Food service managers	465	11.8	1.2	11.8	55	6
Funeral directors	32	9.2	1.7	17.2	3	1
Gaming managers	4	9.9	1.9	18.5	(²)	(²)
General and operations managers	2,398	9.8	1.7	16.8	235	40
Human resources managers	219	6.5	1.7	17.3	14	4
Industrial production managers	255	8.5	1.6	16.3	22	4
Legislators	54	9.8	3.1	31.4	5	2
Lodging managers	68	11.8	1.2	11.8	8	1
Medical and health services managers	250	10.7	1.7	17.2	27	4
Natural sciences managers	42	9.3	1.8	17.6	4	1
Postmasters and mail superintendents	25	9.2	1.7	17.2	2	(²)
Property, real estate, and community association managers	270	8.9	1.6	16.3	24	4
Purchasing managers	132	12.9	3.1	31.3	17	4
Social and community service managers	128	9.9	1.9	18.8	13	2
Transportation, storage, and distribution managers	149	8.5	1.6	16.3	13	2
All other managers	981	9.8	1.8	17.7	96	17
Business and financial operations occupations	4,956	10.5	1.9	18.6	522	92
Business operations specialists	2,841	10.4	2.0	19.8	295	56
Agents and business managers of artists, performers, and athletes	17	10.9	2.0	20.2	2	(²)
Buyers and purchasing agents	404	10.8	2.4	23.6	44	10
Purchasing agents and buyers, farm products	20	9.8	2.0	19.8	2	(²)
Purchasing agents, except wholesale, retail, and farm products	237	9.8	2.0	19.8	23	5
Wholesale and retail buyers, except farm products	148	12.0	3.0	30.3	18	4
Claims adjusters, appraisers, examiners, and investigators	207	12.1	1.1	11.1	25	2
Claims adjusters, examiners, and investigators	194	12.1	1.1	11.1	24	2
Insurance appraisers, auto damage	13	12.1	1.1	11.1	2	(²)
Compliance officers, except agriculture, construction, health and safety, and transportation ¹	140	6.8	2.5	25.5	9	4
Cost estimators	211	13.1	2.2	22.0	28	5
Emergency management specialists	10	13.5	2.9	28.5	1	(²)
Human resources, training, and labor relations specialists	490	9.7	1.9	19.3	48	9
Compensation, benefits, and job analysis specialists	87	9.7	1.9	19.3	8	2
Employment, recruitment, and placement specialists	199	9.7	1.9	19.3	19	4
Training and development specialists	204	9.7	1.9	19.3	20	4
Management analysts	501	9.9	0.9	8.8	50	4
Meeting and convention planners	34	9.9	1.8	18.5	3	1
All other business operations specialists	827	10.4	2.5	25.4	86	21
Financial specialists	2,115	10.9	1.7	17.0	230	36
Accountants and auditors	976	10.3	1.5	14.8	100	14
Appraisers and assessors of real estate	57	9.8	2.8	28.4	6	2

See footnotes at end of table.

Table 11. Total and net replacement rates and annual average replacement needs, 2000-10 — Continued

(Numbers in thousands)

2000 Matrix occupation	Total employment, 2000	Replacement rate (Percent)			Annual average replacement needs, 2000-10	
		Total, 1999-2000	Net, 2000-10		Total	Net
			Annual average	10-year		
Budget analysts	70	11.7	2.0	20.0	8	1
Credit analysts	60	11.7	2.0	20.0	7	1
Financial analysts	145	13.5	1.4	13.6	20	2
Financial examiners	25	10.0	1.9	19.2	2	(²)
Insurance underwriters	107	9.9	1.5	15.2	11	2
Loan counselors and officers	265	11.7	2.0	20.0	31	5
Loan counselors	29	11.7	2.0	20.0	3	1
Loan officers	236	11.7	2.0	20.0	28	5
Personal financial advisors	94	14.2	1.2	11.6	13	1
Tax examiners, collectors, and revenue agents	79	7.9	2.7	26.6	6	2
Tax preparers	69	11.7	2.0	20.0	8	1
All other financial specialists	169	11.7	2.0	20.0	20	3
Professional and related occupations	26,758	9.4	1.9	19.4	2,505	520
Computer and mathematical occupations	2,993	7.4	1.0	9.7	221	29
Computer specialists	2,903	7.3	0.9	9.2	212	27
Computer programmers	585	6.1	2.1	21.0	36	12
Computer scientists and systems analysts	459	7.9	0.9	8.8	36	4
Computer and information scientists, research	28	7.9	0.9	8.8	2	(²)
Computer systems analysts	431	7.9	0.9	8.8	34	4
Computer software engineers	697	7.4	0.7	6.7	51	5
Computer software engineers, applications	380	7.4	0.7	6.7	28	3
Computer software engineers, systems software	317	7.4	0.7	6.7	23	2
Computer support specialists	506	7.9	0.4	4.2	40	2
Database administrators	106	7.9	0.4	4.2	8	(²)
Network and computer systems administrators	229	7.9	0.4	4.2	18	1
Network systems and data communications analysts	119	7.9	0.4	4.2	9	1
All other computer specialists	203	7.9	0.9	8.8	16	2
Mathematical science occupations	89	8.6	2.3	23.0	8	2
Mathematical scientists and technicians	85	8.6	2.4	23.6	7	2
Actuaries	14	8.1	1.3	12.8	1	(²)
Mathematicians	4	8.1	1.3	12.8	(²)	(²)
Operations research analysts	47	8.8	3.2	32.2	4	2
Statisticians	19	8.1	1.3	12.8	2	(²)
Miscellaneous mathematical science occupations	5	8.1	1.3	12.8	(²)	(²)
Architecture and engineering occupations	2,605	6.3	2.1	20.8	165	54
Architects, surveyors, and cartographers	196	4.8	1.4	14.0	9	3
Architects, except naval	124	3.8	0.6	5.7	5	1
Architects, except landscape and naval	102	3.8	0.6	5.7	4	1
Landscape architects	22	3.8	0.6	5.7	1	(²)
Surveyors, cartographers, and photogrammetrists	65	12.2	3.0	30.4	8	2
Cartographers and photogrammetrists	7	12.2	3.0	30.4	1	(²)
Surveyors	58	12.2	3.0	30.4	7	2
All other architects, surveyors, and cartographers	6	12.2	0.6	5.7	1	(²)
Engineers	1,465	4.5	2.0	20.0	65	29
Aerospace engineers	50	4.7	3.0	29.5	2	1
Agricultural engineers	2	4.7	2.2	21.8	(²)	(²)
Biomedical engineers	7	6.1	2.0	19.9	(²)	(²)
Chemical engineers	33	4.7	1.8	17.5	2	1
Civil engineers	232	1.8	1.6	15.6	4	4
Computer hardware engineers	60	5.7	1.4	14.3	3	1
Electrical and electronics engineers	288	4.9	1.8	18.3	14	5
Electrical engineers	157	4.9	1.8	18.3	8	3
Electronics engineers, except computer	130	4.9	1.8	18.3	6	2
Environmental engineers	52	6.1	2.0	19.9	3	1
Industrial engineers, including health and safety	198	6.3	1.7	16.7	13	3
Health and safety engineers, except mining safety engineers and inspectors	44	6.3	1.7	16.7	3	1
Industrial engineers	154	6.3	1.7	16.7	10	3
Marine engineers and naval architects	5	4.7	2.2	21.8	(²)	(²)
Materials engineers	33	4.7	2.2	21.8	2	1
Mechanical engineers	221	3.2	2.9	29.3	7	6

See footnotes at end of table.

Table 11. Total and net replacement rates and annual average replacement needs, 2000-10 — Continued

(Numbers in thousands)

2000 Matrix occupation	Total employment, 2000	Replacement rate (Percent)			Annual average replacement needs, 2000-10	
		Total, 1999-2000	Net, 2000-10		Total	Net
			Annual average	10-year		
Mining and geological engineers, including mining safety engineers	6	4.7	2.2	21.8	(²)	(²)
Nuclear engineers	14	4.7	2.2	21.8	1	(²)
Petroleum engineers	9	4.7	2.2	21.8	(²)	(²)
All other engineers	253	6.1	2.0	19.9	15	5
Drafters, engineering, and mapping technicians	944	10.1	2.3	23.4	96	22
Drafters	213	11.9	3.0	30.3	25	6
Architectural and civil drafters	102	11.9	3.0	30.3	12	3
Electrical and electronics drafters	41	11.9	3.0	30.3	5	1
Mechanical drafters	70	11.9	3.0	30.3	8	2
Engineering technicians, except drafters	519	9.3	2.0	20.2	48	10
Aerospace engineering and operations technicians ¹	21	9.3	2.0	20.2	2	(²)
Civil engineering technicians ¹	94	9.3	2.0	20.2	9	2
Electrical and electronic engineering technicians ¹	233	9.3	2.0	20.2	22	5
Electro-mechanical technicians ¹	43	9.3	2.0	20.2	4	1
Environmental engineering technicians ¹	18	9.3	2.0	20.2	2	(²)
Industrial engineering technicians ¹	52	9.3	2.0	20.2	5	1
Mechanical engineering technicians ¹	58	9.3	2.0	20.2	5	1
Surveying and mapping technicians ¹	55	13.4	3.2	32.3	7	2
All other drafters, engineering, and mapping technicians ¹	156	10.2	2.2	21.6	16	3
Life, physical, and social science occupations	1,164	10.1	2.9	28.9	118	34
Life scientists	184	6.3	3.2	32.4	12	6
Agricultural and food scientists	17	6.9	3.3	32.5	1	1
Biological scientists	73	7.5	3.6	35.9	5	3
Conservation scientists and foresters	29	6.9	3.3	32.5	2	1
Conservation scientists	16	6.9	3.3	32.5	1	1
Foresters	12	6.9	3.3	32.5	1	(²)
Medical scientists	37	4.1	2.3	22.7	2	1
All other life scientists	28	4.1	3.6	35.9	1	1
Physical scientists	239	7.1	3.3	33.5	17	8
Astronomers and physicists	10	6.9	3.3	32.5	1	(²)
Atmospheric and space scientists	7	6.9	3.3	32.5	(²)	(²)
Chemists and materials scientists	92	7.3	3.1	31.4	7	3
Chemists	84	7.3	3.1	31.4	6	3
Materials scientists	8	7.3	3.1	31.4	1	(²)
Environmental scientists and geoscientists	97	6.9	3.3	32.5	7	3
Environmental scientists and specialists, including health	64	6.9	3.3	32.5	4	2
Geoscientists, except hydrologists and geographers	25	6.9	3.3	32.5	2	1
Hydrologists	8	6.9	3.3	32.5	1	(²)
All other physical scientists ¹	33	7.7	4.2	42.4	3	1
Social scientists and related occupations	410	11.6	2.3	23.2	48	10
Economists	22	14.9	2.2	22.1	3	(²)
Market and survey researchers	113	14.9	2.2	22.1	17	2
Market research analysts	90	14.9	2.2	22.1	13	2
Survey researchers	23	14.9	2.2	22.1	3	(²)
Psychologists	182	9.7	2.3	23.3	18	4
Social scientists, other ¹	15	10.3	2.5	25.0	2	(²)
Urban and regional planners ¹	30	10.3	2.5	25.0	3	1
All other social scientists and related workers ¹	49	9.9	2.4	24.2	5	1
Life, physical, and social science technicians	330	15.4	3.1	30.6	51	10
Agricultural and food science technicians	18	17.6	2.3	23.2	3	(²)
Biological technicians	41	17.6	2.3	23.2	7	1
Chemical technicians ¹	73	17.6	2.3	23.2	13	2
Geological and petroleum technicians ¹	10	17.6	2.3	23.2	2	(²)
Nuclear technicians	3	6.7	3.0	30.0	(²)	(²)
Other life, physical, and social science technicians	184	11.0	3.6	36.4	20	7
Environmental science and protection technicians, including health ¹	27	11.0	3.6	36.4	3	1
Forensic science technicians ¹	6	11.0	3.6	36.4	1	(²)
Forest and conservation technicians ¹	18	11.0	3.6	36.4	2	1
All other life, physical, and social science technicians ¹	133	11.0	3.6	36.4	15	5
Community and social services occupations	1,869	11.8	1.7	17.0	221	32

See footnotes at end of table.

Table 11. Total and net replacement rates and annual average replacement needs, 2000-10 — Continued

(Numbers in thousands)

2000 Matrix occupation	Total employment, 2000	Replacement rate (Percent)			Annual average replacement needs, 2000-10	
		Total, 1999-2000	Net, 2000-10		Total	Net
			Annual average	10-year		
Counselors	465	10.9	2.0	20.5	51	10
Educational, vocational, and school counselors	205	10.9	2.0	20.5	22	4
Marriage and family therapists	21	10.9	2.0	20.5	2	(²)
Mental health counselors	67	10.9	2.0	20.5	7	1
Rehabilitation counselors	110	10.9	2.0	20.5	12	2
Substance abuse and behavioral disorder counselors	61	10.9	2.0	20.5	7	1
Miscellaneous community and social service specialists	398	16.5	1.5	14.8	66	6
Health educators ¹	43	16.5	1.5	14.8	7	1
Probation officers and correctional treatment specialists ¹	84	16.5	1.5	14.9	14	1
Social and human service assistants ¹	271	16.5	1.5	14.8	45	4
Religious workers	293	8.6	2.3	23.0	25	7
Clergy	171	6.9	2.7	27.3	12	5
Directors, religious activities and education	121	18.9	1.7	17.0	23	2
Social workers	468	12.6	1.1	11.2	59	5
Child, family, and school social workers	281	12.6	1.1	11.2	35	3
Medical and public health social workers	104	12.6	1.1	11.2	13	1
Mental health and substance abuse social workers	83	12.6	1.1	11.2	10	1
All other counselors, social, and religious workers ¹	244	13.6	1.7	17.5	33	4
Legal occupations	1,119	7.2	0.8	7.9	80	9
Judges, magistrates, and other judicial workers	43	9.8	2.8	28.4	4	1
Administrative law judges, adjudicators, and hearing officers ¹	14	9.8	2.8	28.4	1	(²)
Arbitrators, mediators, and conciliators ¹	4	9.8	2.8	28.4	(²)	(²)
Judges, magistrate judges, and magistrates ¹	24	9.8	2.8	28.3	2	1
Lawyers	681	5.1	0.7	6.7	35	5
Paralegals and legal assistants	188	12.2	0.6	6.1	23	1
Miscellaneous legal support workers	98	10.2	0.9	9.2	10	1
Court reporters	18	10.2	0.9	9.2	2	(²)
Law clerks	31	10.2	0.9	9.2	3	(²)
Title examiners, abstractors, and searchers	48	10.2	0.9	9.2	5	(²)
All other legal and related workers	109	10.2	0.9	9.2	11	1
Education, training, and library occupations	8,260	11.4	2.2	21.6	943	179
Postsecondary teachers ¹	1,344	13.7	2.7	27.3	184	37
Primary, secondary, and special education teachers	4,284	8.7	2.2	22.2	372	95
Preschool and kindergarten teachers	597	13.1	1.2	12.4	78	7
Preschool teachers, except special education	423	13.1	1.2	12.4	55	5
Kindergarten teachers, except special education	175	13.1	1.2	12.4	23	2
Elementary and middle school teachers	2,122	9.4	2.3	22.7	199	48
Elementary school teachers, except special education	1,532	9.4	2.3	22.7	144	35
Middle school teachers, except special and vocational education	570	9.4	2.3	22.7	54	13
Vocational education teachers, middle school	20	9.4	2.3	22.7	2	(²)
Secondary school teachers	1,113	6.0	3.0	30.5	67	34
Secondary school teachers, except special and vocational education	1,004	6.0	3.0	30.4	60	31
Vocational education teachers, secondary school	109	6.0	3.0	30.5	7	3
Special education teachers	453	6.4	1.3	12.7	29	6
Special education teachers, preschool, kindergarten, and elementary school	234	6.4	1.3	12.7	15	3
Special education teachers, middle school	96	6.4	1.3	12.7	6	1
Special education teachers, secondary school	123	6.4	1.3	12.7	8	2
Other teachers and instructors	901	18.4	1.0	10.0	166	9
Adult literacy, remedial education, and GED teachers and instructors	67	18.4	1.0	10.0	12	1
Self-enrichment education teachers	186	18.4	1.0	10.0	34	2
All other teachers, primary, secondary, and adult	648	18.4	1.0	10.0	119	7
Library, museum, training, and other education occupations	1,731	16.6	2.2	21.7	287	38
Archivists, curators, and museum technicians ¹	21	4.2	2.1	20.5	1	(²)
Librarians	149	4.1	2.1	20.8	6	3
Library technicians	109	26.6	4.4	44.5	29	5
Teacher assistants	1,262	20.3	2.1	20.9	256	26
Other education, training, library, and museum workers	190	19.0	1.5	14.5	36	3
Audio-visual collections specialists	11	19.0	1.5	14.5	2	(²)
Farm and home management advisors	11	19.0	1.5	14.5	2	(²)
Instructional coordinators	81	19.0	1.5	14.5	15	1
All other library, museum, training, and other education workers	87	19.0	1.5	14.5	17	1

See footnotes at end of table.

Table 11. Total and net replacement rates and annual average replacement needs, 2000-10 — Continued

(Numbers in thousands)

2000 Matrix occupation	Total employment, 2000	Replacement rate (Percent)			Annual average replacement needs, 2000-10	
		Total, 1999-2000	Net, 2000-10		Total	Net
			Annual average	10-year		
Arts, design, entertainment, sports, and media occupations	2,371	14.0	1.9	19.0	333	45
Art and design occupations	750	14.2	1.3	13.1	106	10
Artists and related workers	147	12.2	2.1	20.6	18	3
Art directors ¹	47	12.2	2.1	20.6	6	1
Fine artists, including painters, sculptors, and illustrators ¹	31	12.2	2.1	20.6	4	1
Multi-media artists and animators ¹	69	12.2	2.1	20.6	8	1
Designers	492	14.8	1.0	10.0	73	5
Commercial and industrial designers	50	14.8	1.0	10.0	7	1
Fashion designers	16	14.8	1.0	10.0	2	(²)
Floral designers	102	14.8	1.0	10.0	15	1
Graphic designers	190	14.8	1.0	10.0	28	2
Interior designers	46	14.8	1.0	10.0	7	(²)
Merchandise displayers and window trimmers	76	14.8	1.0	10.0	11	1
Set and exhibit designers	12	14.8	1.0	10.0	2	(²)
All other art and design workers ¹	112	13.7	1.6	16.4	15	2
Entertainers and performers, sports and related occupations	626	18.2	1.9	19.2	114	12
Actors, producers, and directors	158	19.5	1.9	19.2	31	3
Actors	99	20.2	1.9	19.2	20	2
Producers and directors ¹	58	19.2	1.9	19.2	11	1
Athletes, coaches, umpires, and related workers	129	19.2	2.0	19.8	25	3
Athletes and sports competitors	18	19.2	2.0	19.8	3	(²)
Coaches and scouts	99	19.2	2.0	19.8	19	2
Umpires, referees, and other sports officials	11	19.2	2.0	19.8	2	(²)
Dancers and choreographers	26	14.7	1.9	19.3	4	1
Dancers ¹	15	14.7	1.9	19.2	2	(²)
Choreographers ¹	11	14.7	1.9	19.3	2	(²)
Musicians, singers, and related workers	240	17.2	1.9	18.9	41	5
Music directors and composers	50	17.2	1.9	18.9	9	1
Musicians and singers	191	17.2	1.9	18.9	33	4
All other entertainers and performers, sports and related workers ¹	74	14.7	1.9	19.3	11	1
Media and communication occupations	703	12.3	2.3	22.5	87	16
Announcers	71	5.9	1.5	15.0	4	1
News analysts, reporters and correspondents	78	12.1	3.2	32.4	9	3
Public relations specialists	137	13.9	1.7	17.0	19	2
Writers and editors	305	12.3	2.5	25.4	37	8
Editors	122	11.9	3.2	32.4	14	4
Technical writers	57	8.7	3.0	30.1	5	2
Writers and authors	126	14.3	1.6	16.4	18	2
Miscellaneous media and communications workers	112	14.7	1.9	19.3	17	2
Interpreters and translators ¹	22	14.7	1.9	19.3	3	(²)
All other media and communication workers ¹	90	14.7	1.9	19.3	13	2
Media and communication equipment occupations	291	9.3	2.5	25.2	27	7
Broadcast and sound engineering technicians and radio operators	87	8.2	3.0	29.7	7	3
Audio and video equipment technicians ¹	37	8.2	3.0	29.7	3	1
Broadcast technicians ¹	36	8.2	3.0	29.7	3	1
Radio operators ¹	3	8.2	3.0	29.7	(²)	(²)
Sound engineering technicians ¹	11	8.2	3.0	29.7	1	(²)
Photographers	131	9.9	2.0	19.9	13	3
Television, video, and motion picture camera operators and editors	43	9.9	2.0	20.0	4	1
Camera operators, television, video, and motion picture	27	9.9	2.0	20.0	3	1
Film and video editors	16	9.9	2.0	20.0	2	(²)
All other media and communication equipment workers ¹	31	6.1	4.2	42.4	2	1
Healthcare practitioners and technical occupations	6,379	6.9	2.2	21.9	443	140
Health diagnosing and treating practitioners	3,921	6.0	2.1	20.6	233	81
Chiropractors	50	4.0	1.8	18.2	2	1
Dentists	152	4.0	2.3	22.6	6	3
Dietitians and nutritionists	49	10.8	2.7	26.9	5	1
Optometrists	31	4.0	1.8	18.2	1	1
Pharmacists	217	9.4	3.0	29.9	20	6
Physicians and surgeons	598	4.5	1.5	14.8	27	9
Physician assistants	58	9.4	2.2	21.7	5	1

See footnotes at end of table.

Table 11. Total and net replacement rates and annual average replacement needs, 2000-10 — Continued

(Numbers in thousands)

2000 Matrix occupation	Total employment, 2000	Replacement rate (Percent)			Annual average replacement needs, 2000-10	
		Total, 1999-2000	Net, 2000-10		Total	Net
			Annual average	10-year		
Podiatrists	18	4.0	1.8	18.2	1	(²)
Registered nurses	2,194	6.4	2.0	20.2	140	44
Therapists	439	4.5	2.5	24.9	20	11
Audiologists ¹	13	4.5	2.5	25.1	1	(²)
Occupational therapists	78	4.5	2.5	25.1	4	2
Physical therapists ¹	132	4.5	2.5	25.1	6	3
Radiation therapists	16	6.1	2.0	20.5	1	(²)
Recreational therapists ¹	29	4.5	2.5	25.1	1	1
Respiratory therapists	83	4.5	2.5	25.1	4	2
Speech-language pathologists ¹	88	4.5	2.5	25.1	4	2
Veterinarians	59	4.0	1.8	18.2	2	1
All other health diagnosing and treating practitioners	57	4.5	2.2	21.6	3	1
Other health professionals and technicians	2,457	9.4	2.4	24.0	230	59
Clinical laboratory technologists and technicians	295	13.1	2.3	23.5	39	7
Medical and clinical laboratory technologists	148	13.1	2.3	23.5	19	3
Medical and clinical laboratory technicians	147	13.1	2.3	23.5	19	3
Dental hygienists	147	3.4	1.4	14.5	5	2
Diagnostic related technologists and technicians	257	7.7	2.2	22.0	20	6
Cardiovascular technologists and technicians	39	7.7	2.2	22.0	3	1
Diagnostic medical sonographers	33	7.7	2.2	22.0	3	1
Nuclear medicine technologists	18	7.7	2.2	22.0	1	(²)
Radiologic technologists and technicians	167	7.7	2.2	22.0	13	4
Emergency medical technicians and paramedics	172	11.2	2.5	25.3	19	4
Health diagnosing and treating practitioner support technicians	417	11.5	2.6	25.9	48	11
Dietetic technicians	26	11.5	2.6	25.9	3	1
Pharmacy technicians	190	11.5	2.6	25.9	22	5
Psychiatric technicians	54	11.5	2.6	25.9	6	1
Respiratory therapy technicians	27	11.5	2.6	25.9	3	1
Surgical technologists	71	11.5	2.6	25.9	8	2
Veterinary technologists and technicians	49	11.5	2.6	25.9	6	1
Licensed practical and licensed vocational nurses	700	8.3	2.6	25.7	58	18
Medical records and health information technicians ¹	136	10.4	2.2	22.3	14	3
Opticians, dispensing	68	2.1	1.8	18.5	1	1
Other health practitioners and technical workers	266	8.2	2.6	25.8	22	7
Athletic trainers	15	11.5	2.6	25.8	2	(²)
Occupational health and safety specialists and technicians	35	11.5	2.6	25.8	4	1
Orthotists and prosthetists	5	11.5	2.6	25.9	1	(²)
All other health practitioners and technical workers ¹	212	8.0	2.6	25.8	17	5
Service occupations	26,075	21.5	3.2	31.9	5,594	832
Healthcare support occupations	3,196	17.5	1.7	17.1	558	55
Dental assistants	247	6.3	1.8	17.9	16	4
Massage therapists	34	20.8	2.3	22.8	7	1
Nursing, psychiatric, and home health aides	2,053	19.5	1.3	12.8	400	26
Home health aides	615	19.5	1.3	12.7	120	8
Nursing aides, orderlies, and attendants	1,373	19.5	1.3	12.8	268	18
Psychiatric aides	65	19.5	1.3	12.8	13	1
Occupational therapist assistants and aides	25	20.2	2.9	29.4	5	1
Occupational therapist assistants	17	20.2	2.9	29.4	3	(²)
Occupational therapist aides	9	20.2	2.9	29.4	2	(²)
Physical therapist assistants and aides	80	20.2	2.9	29.4	16	2
Physical therapist assistants	44	20.2	2.9	29.4	9	1
Physical therapist aides	36	20.2	2.9	29.4	7	1
Medical assistants and other healthcare support occupations	757	15.0	2.7	26.5	113	20
Medical assistants	329	15.0	2.7	26.5	49	9
Medical equipment preparers	33	15.0	2.7	26.5	5	1
Medical transcriptionists	102	15.0	2.7	26.5	15	3
Pharmacy aides	57	15.0	2.7	26.5	9	2
Veterinary assistants and laboratory animal caretakers	55	15.0	2.7	26.5	8	1
All other healthcare support workers	181	15.0	2.7	26.5	27	5

See footnotes at end of table.

Table 11. Total and net replacement rates and annual average replacement needs, 2000-10 — Continued

(Numbers in thousands)

2000 Matrix occupation	Total employment, 2000	Replacement rate (Percent)			Annual average replacement needs, 2000-10	
		Total, 1999-2000	Net, 2000-10		Total	Net
			Annual average	10-year		
Protective service occupations	3,087	12.6	2.8	28.1	389	87
First-line supervisors/managers, protective service workers	273	8.2	2.8	27.8	22	8
First-line supervisors/managers of correctional officers	30	9.2	1.7	17.2	3	1
First-line supervisors/managers of fire fighting and prevention workers ¹	62	8.6	3.2	31.9	5	2
First-line supervisors/managers of police and detectives	121	7.8	2.7	27.0	9	3
First-line supervisors/managers of protective service workers, except police, fire and corrections ¹	61	8.6	3.1	30.6	5	2
Fire fighters	258	4.6	2.6	25.9	12	7
Fire inspectors ¹	13	4.5	2.7	26.5	1	(²)
Law enforcement workers	1,150	4.9	2.2	22.3	57	26
Bailiffs, correctional officers, and jailers	427	7.2	2.4	24.3	31	10
Bailiffs ¹	14	7.2	2.4	24.3	1	(²)
Correctional officers and jailers ¹	414	7.2	2.4	24.3	30	10
Detectives and criminal investigators	93	4.2	2.2	22.4	4	2
Fish and game wardens ¹	8	3.4	1.2	12.1	(²)	(²)
Parking enforcement workers ¹	9	3.4	1.2	12.1	(²)	(²)
Police and sheriff's patrol officers ¹	607	3.4	2.1	21.1	21	13
Transit and railroad police	6	3.4	2.2	22.4	(²)	(²)
Other protective service workers	1,394	24.9	3.3	33.5	347	47
Animal control workers	9	45.9	7.6	76.5	4	1
Crossing guards ¹	74	24.6	3.4	34.0	18	3
Private detectives and investigators	39	22.7	2.8	27.6	9	1
Security guards and gaming surveillance officers	1,117	21.9	2.7	27.3	245	30
Gaming surveillance officers and gaming investigators ¹	11	21.9	2.7	27.3	2	(²)
Security guards ¹	1,106	21.9	2.7	27.3	242	30
All other protective service workers	156	45.9	7.6	76.5	72	12
Food preparation and serving related occupations	10,140	28.5	4.5	45.3	2,886	460
Supervisors, food preparation and serving workers	788	21.9	2.6	26.2	173	21
Chefs and head cooks	139	25.0	3.1	30.8	35	4
First-line supervisors/managers of food preparation and serving workers	649	21.0	2.5	25.2	136	16
Cooks and food preparation workers	2,709	24.4	3.2	31.6	661	86
Cooks	1,864	23.7	2.8	28.4	442	53
Cooks, fast food ¹	522	23.7	2.8	28.4	124	15
Cooks, institution and cafeteria ¹	465	23.7	2.8	28.4	110	13
Cooks, private household ¹	5	23.7	2.8	28.4	1	(²)
Cooks, restaurant ¹	668	23.7	2.8	28.4	158	19
Cooks, short order ¹	205	23.7	2.8	28.4	49	6
Food preparation workers	844	27.4	3.9	38.6	231	33
Food and beverage serving workers	5,201	31.9	5.8	58.4	1,659	304
Bartenders	387	21.8	3.9	39.5	84	15
Combined food preparation and serving workers, including fast food	2,206	33.4	6.1	61.2	737	135
Counter attendants, cafeteria, food concession, and coffee shop	421	51.3	7.7	77.5	216	33
Food servers, nonrestaurant	205	41.4	4.4	44.4	85	9
Waiters and waitresses	1,983	30.0	5.6	56.3	596	112
Other food preparation and serving related workers	1,442	33.1	3.5	34.5	477	50
Dining room and cafeteria attendants and bartender helpers	431	37.4	3.4	33.6	161	14
Dishwashers	525	29.8	3.8	37.5	156	20
Hosts and hostesses, restaurant, lounge, and coffee shop	343	24.6	3.0	29.8	84	10
All other food preparation and serving related workers	143	29.8	3.8	37.5	43	5
Building and grounds cleaning and maintenance occupations	5,549	20.4	2.0	20.4	1,131	113
Supervisors, building and grounds cleaning and maintenance workers	378	7.3	1.8	18.0	28	7
First-line supervisors/managers of housekeeping and janitorial workers	219	8.1	2.7	27.2	18	6
First-line supervisors/managers of landscaping, lawn service, and groundskeeping workers	159	6.5	0.5	5.5	10	1
Building cleaning workers	3,981	21.4	2.0	19.6	852	78
Janitors and cleaners, except maids and housekeeping cleaners	2,348	21.6	1.8	18.1	507	42
Maids and housekeeping cleaners ¹	1,633	21.2	2.2	21.7	346	35
Grounds maintenance workers	973	21.5	2.5	25.1	210	24
Landscaping and groundskeeping workers	894	21.5	2.5	25.1	193	22

See footnotes at end of table.

Table 11. Total and net replacement rates and annual average replacement needs, 2000-10 — Continued

(Numbers in thousands)

2000 Matrix occupation	Total employ- ment, 2000	Replacement rate (Percent)			Annual average replacement needs, 2000-10	
		Total, 1999- 2000	Net, 2000-10		Total	Net
			Annual average	10-year		
Pesticide handlers, sprayers, and applicators, vegetation	27	21.5	2.5	25.1	6	1
Tree trimmers and pruners	52	21.5	2.5	25.1	11	1
Pest control workers ¹	58	11.5	2.0	20.2	7	1
All other building and grounds cleaning and maintenance workers	159	21.6	2.0	19.8	34	3
Personal care and service occupations	4,103	19.5	2.9	28.8	801	118
First-line supervisors/managers of personal service workers	125	6.8	2.8	27.6	8	3
Animal care and service workers	145	15.4	2.1	21.0	22	3
Animal trainers ¹	15	14.7	1.9	19.3	2	(²)
Nonfarm animal caretakers	131	15.5	2.1	21.1	20	3
Child care workers	1,193	31.0	3.4	33.9	370	40
Entertainment attendants and related workers	344	29.5	4.8	48.5	101	17
Motion picture projectionists ¹	11	15.1	2.4	23.5	2	(²)
Ushers, lobby attendants, and ticket takers ¹	112	22.8	8.0	80.2	26	9
Miscellaneous entertainment attendants and related workers	221	31.6	3.4	33.6	70	7
Amusement and recreation attendants	197	31.6	3.4	33.6	62	7
Costume, locker room, and other attendants	24	31.6	3.4	33.6	8	1
Funeral service workers	33	20.8	2.3	22.8	7	1
Embalmers	7	20.8	2.3	22.8	1	(²)
Funeral attendants	26	20.8	2.3	22.8	5	1
Gaming occupations	167	28.5	3.2	32.5	48	5
First-line supervisors/managers, gaming workers	46	6.8	2.8	27.6	3	1
Gaming supervisors	31	6.8	2.8	27.6	2	1
Slot key persons	14	6.8	2.8	27.6	1	(²)
Gaming services workers	100	32.4	3.4	34.4	32	3
Gaming and sports book writers and runners	12	32.4	3.4	34.4	4	(²)
Gaming dealers	88	32.4	3.4	34.4	28	3
All other gaming service workers	21	32.4	3.4	33.9	7	1
Personal appearance workers	790	11.3	2.5	24.8	89	20
Barbers	73	4.1	2.8	28.5	3	2
Hairdressers, hairstylists, and cosmetologists	636	12.3	2.4	24.4	78	16
Miscellaneous personal appearance workers	81	12.3	2.4	24.4	10	2
Manicurists and pedicurists	40	12.3	2.4	24.4	5	1
Shampooers	20	12.3	2.4	24.4	2	(²)
Skin care specialists	21	12.3	2.4	24.4	3	1
Personal and home care aides ¹	414	20.3	1.5	15.2	84	6
Recreation and fitness workers	427	11.9	2.1	20.7	51	9
Fitness trainers and aerobics instructors	158	11.9	2.1	20.7	19	3
Recreation workers	269	11.9	2.1	20.7	32	6
Residential advisors	44	20.8	2.3	22.8	9	1
Transportation, tourism, and lodging attendants	259	12.7	3.4	33.9	33	9
Baggage porters, bellhops, and concierges	68	22.8	3.4	34.4	16	2
Baggage porters and bellhops ¹	51	22.8	3.4	34.4	12	2
Concierges ¹	18	22.8	3.4	34.4	4	1
Tour and travel guides ¹	44	22.8	3.1	31.1	10	1
Transportation attendants	147	6.4	3.4	34.4	9	5
Flight attendants ¹	124	6.4	3.4	34.4	8	4
Transportation attendants, except flight attendants and baggage porters ¹	23	6.4	3.4	34.4	1	1
All other personal care and service workers	163	16.7	2.3	22.8	27	4
Sales and related occupations	15,513	18.0	3.1	31.2	2,792	484
Advertising sales agents	155	15.9	2.0	20.3	25	3
Cashiers	3,363	33.8	4.5	45.4	1,138	153
Cashiers, except gaming	3,325	33.8	4.5	45.4	1,125	151
Gaming change persons and booth cashiers	38	33.8	4.5	45.4	13	2
Counter and rental clerks	423	35.5	4.5	45.3	150	19
Door-to-door sales workers, news and street vendors, and related workers	166	25.3	2.6	25.6	42	4
Insurance sales agents	378	11.4	2.5	25.5	43	10
Models, demonstrators, and product promoters	121	29.2	3.3	32.6	35	4
Demonstrators and product promoters	118	29.2	3.3	32.6	34	4
Models	4	29.2	3.3	32.6	1	(²)
Parts salespersons	260	8.2	3.0	29.8	21	8

See footnotes at end of table.

Table 11. Total and net replacement rates and annual average replacement needs, 2000-10 — Continued

(Numbers in thousands)

2000 Matrix occupation	Total employ- ment, 2000	Replacement rate (Percent)			Annual average replacement needs, 2000-10	
		Total, 1999- 2000	Net, 2000-10		Total	Net
			Annual average	10-year		
Real estate brokers and sales agents	432	8.3	1.7	17.3	36	7
Real estate brokers	93	8.3	1.7	17.3	8	2
Real estate sales agents	339	8.3	1.7	17.3	28	6
Retail salespersons	4,109	27.4	3.8	38.0	1,124	156
Sales engineers ¹	85	4.7	2.6	25.8	4	2
Sales representatives, wholesale and manufacturing	1,821	6.0	2.7	27.1	110	49
Sales representatives, wholesale and manufacturing, technical and scientific products ¹	396	6.0	2.7	27.2	24	11
Sales representatives, wholesale and manufacturing, except technical and scientific products ¹	1,425	6.0	2.7	27.1	86	39
Securities, commodities, and financial services sales agents	367	15.1	0.8	8.1	55	3
Supervisors, sales workers	2,504	9.9	1.4	14.5	247	36
First-line supervisors/managers of retail sales workers	2,072	9.9	1.4	14.4	206	30
First-line supervisors/managers of non-retail sales workers	432	9.5	1.5	14.7	41	6
Telemarketers	572	25.4	2.1	20.6	145	12
Travel agents	135	16.8	2.4	24.2	23	3
All other sales and related workers ¹	621	15.9	2.2	22.0	99	14
Office and administrative support occupations	23,882	17.4	2.1	21.0	4,146	502
First-line supervisors/managers of office and administrative support workers ¹	1,392	10.5	1.9	19.3	146	27
Communications equipment operators	339	18.5	3.0	29.8	63	10
Switchboard operators, including answering service ¹	259	18.5	3.0	29.5	48	8
Telephone operators	54	18.5	2.9	29.5	10	2
All other communications equipment operators ¹	26	19.0	3.3	33.1	5	1
Financial, information, and record clerks	9,006	19.5	2.1	20.8	1,760	187
Financial clerks	3,696	15.6	2.5	25.1	577	93
Bill and account collectors	400	17.7	2.5	24.9	71	10
Billing and posting clerks and machine operators ¹	506	13.6	2.4	24.5	69	12
Bookkeeping, accounting, and auditing clerks	1,991	15.0	1.9	19.0	298	38
Gaming cage workers	22	33.8	4.5	45.4	7	1
Payroll and timekeeping clerks	201	12.7	2.9	29.0	26	6
Procurement clerks	76	16.6	2.3	22.8	13	2
Tellers	499	19.7	4.8	48.1	98	24
Information and record clerks	5,099	22.2	1.8	18.0	1,131	92
Brokerage clerks	70	10.7	1.3	13.1	7	1
Correspondence clerks ¹	38	14.1	2.9	29.3	5	1
Court, municipal, and license clerks	105	13.4	1.6	15.9	14	2
Credit authorizers, checkers, and clerks	86	19.9	0.9	9.1	17	1
Customer service representatives	1,946	18.4	0.8	8.5	359	17
Eligibility interviewers, government programs ¹	117	11.2	2.9	29.3	13	3
File clerks	288	27.3	3.2	31.9	79	9
Hotel, motel, and resort desk clerks	177	41.5	4.4	43.6	73	8
Human resources assistants, except payroll and timekeeping ¹	177	14.1	2.3	22.7	25	4
Interviewers, except eligibility and loan	154	34.2	2.1	21.2	53	3
Library assistants, clerical	98	26.6	4.4	44.5	26	4
Loan interviewers and clerks	139	18.3	0.7	6.8	25	1
New accounts clerks	87	34.2	2.1	21.2	30	2
Order clerks ¹	348	14.1	2.1	21.2	49	7
Receptionists and information clerks	1,078	24.9	2.2	22.0	269	24
Reservation and transportation ticket agents and travel clerks	191	20.4	2.7	27.0	39	5
All other financial, information, and record clerks	211	10.7	1.3	13.1	23	3
Material recording, scheduling, dispatching, and distributing occupations	4,238	17.2	2.7	27.3	729	116
Cargo and freight agents	60	14.9	2.0	20.1	9	1
Couriers and messengers	141	26.0	2.7	27.2	37	4
Dispatchers	254	4.7	1.6	16.5	12	4
Dispatchers, except police, fire, and ambulance ¹	168	4.7	1.6	16.5	8	3
Police, fire, and ambulance dispatchers ¹	86	4.7	1.6	16.5	4	1
Meter readers, utilities ¹	49	15.5	2.4	24.4	8	1
Postal service workers	688	4.1	2.6	25.8	28	18

See footnotes at end of table.

Table 11. Total and net replacement rates and annual average replacement needs, 2000-10 — Continued

(Numbers in thousands)

2000 Matrix occupation	Total employ- ment, 2000	Replacement rate (Percent)			Annual average replacement needs, 2000-10	
		Total, 1999- 2000	Net, 2000-10		Total	Net
			Annual average	10-year		
Postal service clerks	74	4.1	2.2	21.9	3	2
Postal service mail carriers ¹	324	4.1	3.0	30.3	13	10
Postal service mail sorters, processors, and processing machine operators	289	4.1	2.2	21.9	12	6
Production, planning, and expediting clerks ¹	332	11.0	1.7	16.7	36	6
Shipping, receiving, and traffic clerks	890	14.9	2.0	20.1	133	18
Stock clerks and order fillers ¹	1,679	27.8	3.6	35.6	467	60
Weighers, measurers, checkers, and samplers, recordkeeping ¹	83	15.5	2.4	24.4	13	2
All other material recording, scheduling, dispatching, and distributing workers ¹	63	27.8	3.6	35.6	17	2
Secretaries, administrative assistants, and other office support occupations	8,908	15.8	1.8	18.2	1,405	162
Computer operators¹	194	16.0	1.8	17.9	31	3
Data entry and information processing workers	806	16.8	1.7	17.4	136	14
Data entry keyers	509	17.7	1.6	15.8	90	8
Word processors and typists	297	15.7	2.0	20.2	47	6
Desktop publishers	38	12.7	1.8	17.9	5	1
Insurance claims and policy processing clerks ¹	289	12.2	1.7	17.3	35	5
Mail clerks and mail machine operators, except postal service ¹	188	11.9	2.9	29.2	22	5
Office clerks, general	2,705	25.0	1.9	19.2	676	52
Office machine operators, except computer ¹	84	21.6	3.5	35.2	18	3
Proofreaders and copy markers ¹	35	18.7	3.6	36.2	7	1
Secretaries and administrative assistants	3,902	12.8	1.7	17.0	500	66
Executive secretaries and administrative assistants	1,445	12.8	1.7	17.0	185	25
Legal secretaries	279	12.8	1.7	17.0	36	5
Medical secretaries	314	12.8	1.7	17.0	40	5
Secretaries, except legal, medical, and executive	1,864	12.8	1.7	17.0	239	32
Statistical assistants	21	9.7	0.9	8.8	2	(²)
All other secretaries, administrative assistants, and other office support workers ¹	645	13.8	1.6	16.1	89	10
Farming, fishing, and forestry occupations	1,429	18.7	3.0	29.7	267	42
First-line supervisors/managers/contractors of farming, fishing, and forestry workers ¹	100	8.4	0.8	7.6	8	1
Agricultural workers	987	20.5	3.3	32.6	202	32
Agricultural inspectors ¹	15	9.4	2.5	24.6	1	(²)
Farmworkers ¹	909	21.2	3.3	33.4	192	30
Graders and sorters, agricultural products ¹	63	19.3	2.3	23.2	12	1
Fishers and fishing vessel operators¹	53	10.2	3.2	31.6	5	2
Forest, conservation, and logging workers	90	16.4	2.0	20.2	15	2
Forest and conservation workers ¹	21	16.8	2.4	24.4	4	1
Logging workers	69	15.8	1.9	18.8	11	1
Fallers	13	15.8	1.9	18.8	2	(²)
Logging equipment operators	47	15.8	1.9	18.8	7	1
Log graders and scalers	8	15.8	1.9	18.8	1	(²)
All other farming, fishing, and forestry workers ¹	199	19.7	3.0	30.5	39	6
Construction and extraction occupations	7,451	13.6	2.0	19.7	1,011	147
First-line supervisors/managers of construction trades and extraction workers ¹	792	5.4	2.3	22.8	43	18
Construction trades and related workers	6,466	14.9	1.9	18.9	963	122
Boilermakers ¹	27	7.7	2.6	25.9	2	1
Brickmasons, blockmasons, and stonemasons	158	12.6	1.9	18.6	20	3
Brickmasons and blockmasons ¹	144	12.6	1.9	18.6	18	3
Stonemasons ¹	14	12.6	1.9	18.6	2	(²)
Carpenters¹	1,204	13.4	1.7	16.9	161	20
Carpet, floor, and tile installers and finishers	167	8.6	1.7	16.8	14	3
Carpet installers	76	8.6	1.7	16.8	7	1
Floor layers, except carpet, wood, and hard tiles	23	8.6	1.7	16.8	2	(²)
Floor sanders and finishers	14	8.6	1.7	16.8	1	(²)
Tile and marble setters	54	8.6	1.7	16.8	5	1
Cement masons, concrete finishers, and terrazzo workers	166	2.4	0.9	8.6	4	1
Cement masons and concrete finishers	162	2.4	0.9	8.6	4	1
Terrazzo workers and finishers	3	2.4	0.9	8.6	(²)	(²)
Construction laborers	791	29.8	0.9	9.1	236	7

See footnotes at end of table.

Table 11. Total and net replacement rates and annual average replacement needs, 2000-10 — Continued

(Numbers in thousands)

2000 Matrix occupation	Total employment, 2000	Replacement rate (Percent)			Annual average replacement needs, 2000-10	
		Total, 1999-2000	Net, 2000-10		Total	Net
			Annual average	10-year		
Construction equipment operators	416	7.5	2.1	21.4	31	9
Operating engineers and other construction equipment operators ¹	357	7.1	2.2	21.8	25	8
Paving, surfacing, and tamping equipment operators ¹	55	11.3	1.9	19.3	6	1
Pile-driver operators	4	16.8	1.7	17.1	1	(²)
Drywall installers, ceiling tile installers, and tapers	188	13.1	1.0	9.6	25	2
Drywall and ceiling tile installers	143	13.1	1.0	9.6	19	1
Tapers	44	13.1	1.0	9.6	6	(²)
Electricians ¹	698	9.4	1.9	18.7	66	13
Glaziers ¹	49	12.6	1.9	18.6	6	1
Insulation workers	53	23.5	3.0	30.3	12	2
Painters, construction and maintenance	491	13.6	1.8	17.6	67	9
Paperhangers ¹	27	12.6	1.9	18.6	3	(²)
Pipelayers, plumbers, pipefitters, and steamfitters	568	9.7	1.6	16.5	55	9
Pipelayers ¹	65	9.7	1.6	16.5	6	1
Plumbers, pipefitters, and steamfitters ¹	503	9.7	1.6	16.5	49	8
Plasterers and stucco masons ¹	54	12.6	1.9	18.6	7	1
Reinforcing iron and rebar workers	27	12.9	1.1	10.7	4	(²)
Roofers	158	24.0	2.3	22.8	38	4
Sheet metal workers ¹	224	6.0	2.1	20.7	13	5
Structural iron and steel workers	84	13.9	1.1	10.7	12	1
Helpers, construction trades	450	23.7	5.0	49.6	107	22
Helpers-brickmasons, blockmasons, stonemasons, and tile and marble setters	58	23.7	5.0	49.6	14	3
Helpers-carpenters	101	23.7	5.0	49.6	24	5
Helpers-electricians	114	23.7	5.0	49.6	27	6
Helpers-painters, paperhangers, plasterers, and stucco masons	27	23.7	5.0	49.6	6	1
Helpers-pipelayers, plumbers, pipefitters, and steamfitters	86	23.7	5.0	49.6	20	4
Helpers-roofers	23	23.7	5.0	49.6	6	1
All other helpers, construction trades	41	23.7	5.0	49.6	10	2
Other construction and related workers	465	16.0	1.9	19.4	75	9
Construction and building inspectors	75	3.1	2.3	22.6	2	2
Elevator installers and repairers ¹	23	10.8	3.2	32.4	2	1
Fence erectors	29	16.8	1.7	17.1	5	(²)
Hazardous materials removal workers	37	23.5	3.0	30.3	9	1
Highway maintenance workers	151	20.8	1.5	15.0	31	2
Rail-track laying and maintenance equipment operators	12	24.1	2.2	21.5	3	(²)
Septic tank servicers and sewer pipe cleaners	15	26.3	2.2	22.4	4	(²)
All other construction and related workers	123	16.8	1.7	17.0	21	2
Extraction workers	193	8.0	3.5	35.1	15	7
Derrick, rotary drill, and service unit operators, oil, gas, and mining	45	6.2	3.5	35.0	3	2
Derrick operators, oil and gas ¹	16	6.2	3.5	35.0	1	1
Rotary drill operators, oil and gas ¹	18	6.2	3.5	35.0	1	1
Service unit operators, oil, gas, and mining ¹	11	6.2	3.5	35.0	1	(²)
Earth drillers, except oil and gas ¹	24	12.2	2.0	20.0	3	(²)
Explosives workers, ordnance handling experts, and blasters ¹	5	6.2	3.5	35.0	(²)	(²)
Helpers-Extraction workers ¹	37	16.1	4.5	45.1	6	2
Mining machine operators	22	6.2	3.5	35.0	1	1
Continuous mining machine operators ¹	10	6.2	3.5	35.0	1	(²)
Miscellaneous mining machine operators ¹	12	6.2	3.5	35.0	1	(²)
Roustabouts, oil and gas ¹	41	6.2	3.5	35.0	3	1
All other extraction workers ¹	19	7.4	3.5	35.0	1	1
Installation, maintenance, and repair occupations	5,820	9.2	2.2	21.8	535	127
First-line supervisors/managers of mechanics, installers, and repairers ¹	442	8.7	2.6	26.0	38	11
Electrical and electronic equipment mechanics, installers, and repairers	683	9.8	1.8	17.6	67	12
Avionics technicians	16	10.5	2.0	20.4	2	(²)
Computer, automated teller, and office machine repairers	172	13.9	1.1	10.8	24	2
Electric motor, power tool, and related repairers	37	9.4	2.3	23.0	3	1
Electrical and electronics installers and repairers, transportation equipment	14	9.7	1.9	19.1	1	(²)
Electrical and electronics repairers, industrial and utility	108	11.1	2.0	20.1	12	2
Electrical and electronics repairers, commercial and industrial equipment	90	11.1	2.0	20.1	10	2

See footnotes at end of table.

Table 11. Total and net replacement rates and annual average replacement needs, 2000-10 — Continued

(Numbers in thousands)

2000 Matrix occupation	Total employment, 2000	Replacement rate (Percent)			Annual average replacement needs, 2000-10	
		Total, 1999-2000	Net, 2000-10		Total	Net
			Annual average	10-year		
Electrical and electronics repairers, powerhouse, substation, and relay	18	11.1	2.0	20.1	2	(²)
Electronic equipment installers and repairers, motor vehicles	13	9.4	2.3	23.0	1	(²)
Electronic home entertainment equipment installers and repairers	37	11.2	1.9	18.5	4	1
Radio and telecommunications equipment installers and repairers	196	4.9	1.9	18.8	10	4
Radio mechanics ¹	7	4.9	1.9	18.8	(²)	(²)
Telecommunications equipment installers and repairers, except line installers ¹	189	4.9	1.9	18.8	9	4
Security and fire alarm systems installers	44	9.5	1.9	18.6	4	1
All other electrical and electronic equipment mechanics, installers, and repairers ¹	48	4.9	2.3	23.0	2	1
Vehicle and mobile equipment mechanics, installers, and repairers	1,931	10.7	2.5	25.4	206	49
Aircraft mechanics and service technicians ¹	158	6.9	2.1	21.2	11	3
Automotive body and related repairers	199	9.1	2.5	24.7	18	5
Automotive glass installers and repairers	22	8.5	2.5	25.0	2	1
Automotive service technicians and mechanics ¹	840	12.4	2.4	23.6	104	20
Bus and truck mechanics and diesel engine specialists	285	6.9	2.6	25.7	20	7
Heavy vehicle and mobile equipment service technicians and mechanics	185	8.5	2.6	25.9	16	5
Farm equipment mechanics ¹	41	8.5	2.6	25.9	3	1
Mobile heavy equipment mechanics, except engines ¹	130	8.5	2.6	25.9	11	3
Rail car repairers ¹	14	8.5	2.6	25.9	1	(²)
Small engine mechanics	73	20.2	2.5	25.1	15	2
Motorboat mechanics	25	20.2	2.5	25.1	5	1
Motorcycle mechanics	14	20.2	2.5	25.1	3	(²)
Outdoor power equipment and other small engine mechanics	33	20.2	2.5	25.1	7	1
Miscellaneous vehicle and mobile equipment mechanics, installers, and repairers	170	29.8	3.8	38.3	51	6
Bicycle repairers	9	29.8	3.8	38.3	3	(²)
Recreational vehicle service technicians	12	29.8	3.8	38.3	4	(²)
Tire repairers and changers	89	29.8	3.8	38.3	27	3
All other vehicle and mobile equipment mechanics, installers, and repairers	60	29.8	3.8	38.3	18	2
Other installation, maintenance, and repair occupations	2,764	7.7	2.0	19.5	212	54
Coin, vending, and amusement machine servicers and repairers	37	12.0	2.2	22.1	4	1
Control and valve installers and repairers	46	10.8	3.2	32.4	5	1
Control and valve installers and repairers, except mechanical door ¹	34	10.8	3.2	32.4	4	1
Mechanical door repairers ¹	11	10.8	3.2	32.4	1	(²)
Heating, air conditioning, and refrigeration mechanics and installers	243	8.6	1.0	10.4	21	3
Helpers-Installation, maintenance, and repair workers ¹	145	23.7	5.1	51.0	35	7
Home appliance repairers ¹	43	12.2	2.1	20.5	5	1
Industrial machinery mechanics	198	3.5	2.7	27.0	7	5
Line installers and repairers	263	4.9	2.4	24.1	13	6
Electrical power-line installers and repairers	99	4.6	3.3	32.5	5	3
Telecommunications line installers and repairers ¹	164	5.3	1.9	19.0	9	3
Locksmiths and safe repairers ¹	23	10.8	3.2	32.4	3	1
Maintenance and repair workers, general	1,251	8.3	1.3	13.0	103	16
Maintenance workers, machinery ¹	114	3.4	2.7	27.0	4	3
Manufactured building and mobile home installers	17	10.3	2.0	20.4	2	(²)
Millwrights	72	10.2	3.0	30.1	7	2
Precision instrument and equipment repairers	63	10.5	2.5	25.0	7	2
Camera and photographic equipment repairers ¹	7	10.5	2.5	25.0	1	(²)
Medical equipment repairers ¹	28	10.5	2.5	25.0	3	1
Musical instrument repairers and tuners ¹	7	10.5	2.5	25.0	1	(²)
Watch repairers ¹	5	10.5	2.5	25.0	1	(²)
All other precision instrument and equipment repairers ¹	15	10.5	2.5	25.0	2	(²)
Riggers	20	10.3	2.0	20.4	2	(²)
All other installation, maintenance, and repair workers	228	7.1	2.0	20.4	16	5
Production occupations	13,060	14.6	2.3	22.8	1,906	297
First-line supervisors/managers of production and operating workers	819	8.7	2.6	26.3	71	22
Assemblers and fabricators	2,653	18.8	1.9	19.1	500	51
Aircraft structure, surfaces, rigging, and systems assemblers ¹	20	7.7	2.6	25.9	2	1
Electrical, electronics, and electromechanical assemblers	508	17.5	2.6	25.6	89	13
Coil winders, tapers, and finishers	56	17.5	2.6	25.6	10	1
Electrical and electronic equipment assemblers	379	17.5	2.6	25.6	66	10

See footnotes at end of table.

Table 11. Total and net replacement rates and annual average replacement needs, 2000-10 — Continued

(Numbers in thousands)

2000 Matrix occupation	Total employment, 2000	Replacement rate (Percent)			Annual average replacement needs, 2000-10	
		Total, 1999-2000	Net, 2000-10		Total	Net
			Annual average	10-year		
Electromechanical equipment assemblers	73	17.5	2.6	25.6	13	2
Engine and other machine assemblers ¹	67	15.9	2.0	19.9	11	1
Structural metal fabricators and fitters	101	19.8	1.5	15.4	20	2
Miscellaneous assemblers and fabricators	1,957	19.4	1.7	17.5	380	34
Fiberglass laminators and fabricators ¹	48	19.4	1.7	17.5	9	1
Team assemblers ¹	1,458	19.4	1.8	17.5	283	26
Timing device assemblers, adjusters, and calibrators ¹	12	19.4	1.8	17.5	2	(²)
All other assemblers and fabricators ¹	439	19.4	1.7	17.5	85	8
Food processing occupations	760	12.9	2.2	22.2	98	17
Bakers	160	15.9	1.6	15.8	25	3
Butchers and other meat, poultry, and fish processing workers	411	11.1	2.4	24.3	45	10
Butchers and meat cutters ¹	141	11.1	2.4	24.3	16	3
Meat, poultry, and fish cutters and trimmers ¹	148	11.1	2.4	24.3	16	4
Slaughterers and meat packers ¹	122	11.1	2.4	24.3	13	3
Food and tobacco roasting, baking, and drying machine operators and tenders ¹	18	15.1	2.4	23.5	3	(²)
Food batchmakers ¹	66	13.0	2.4	24.4	9	2
Food cooking machine operators and tenders	37	18.9	1.7	17.5	7	1
All other food processing workers ¹	69	13.0	2.4	24.3	9	2
Metal workers and plastic workers	2,907	11.2	2.5	24.5	327	71
Computer control programmers and operators	186	9.5	3.6	35.5	18	7
Computer-controlled machine tool operators, metal and plastic ¹	162	9.5	3.6	35.5	15	6
Numerical tool and process control programmers ¹	24	9.5	3.6	35.5	2	1
Cutting, punching, and press machine setters, operators, and tenders, metal and plastic ¹	372	9.5	2.0	19.5	35	7
Drilling and boring machine tool setters, operators, and tenders, metal and plastic ¹	71	11.2	3.3	32.7	8	2
Extruding and drawing machine setters, operators, and tenders, metal and plastic ¹	126	17.9	2.2	22.0	23	3
Forging machine setters, operators, and tenders, metal and plastic ¹	54	11.2	3.3	32.7	6	2
Grinding, lapping, polishing, and buffing machine tool setters, operators, and tenders, metal and plastic ¹	145	17.6	2.4	24.4	26	4
Heat treating equipment setters, operators, and tenders, metal and plastic ¹	43	21.8	2.0	20.3	9	1
Lathe and turning machine tool setters, operators, and tenders, metal and plastic ¹	84	14.4	3.9	39.2	12	3
Lay-out workers, metal and plastic ¹	18	7.7	2.6	25.9	1	(²)
Machinists¹	430	6.6	2.1	20.5	28	9
Metal furnace and kiln operators and tenders	40	13.9	2.7	27.5	6	1
Metal-refining furnace operators and tenders ¹	24	13.9	2.7	27.5	3	1
Pourers and casters, metal ¹	16	13.9	2.7	27.5	2	(²)
Milling and planing machine setters, operators, and tenders, metal and plastic ¹	34	11.2	3.3	32.7	4	1
Model makers and patternmakers, metal and plastic	19	11.0	2.7	27.3	2	1
Model makers, metal and plastic ¹	11	11.0	2.7	27.3	1	(²)
Patternmakers, metal and plastic ¹	9	11.0	2.7	27.3	1	(²)
Molders and molding machine setters, operators, and tenders, metal and plastic	235	21.7	2.0	20.3	51	5
Foundry mold and coremakers ¹	59	21.7	2.0	20.3	13	1
Molding, coremaking, and casting machine setters, operators, and tenders, metal and plastic ¹	176	21.7	2.0	20.3	38	4
Multiple machine tool setters, operators, and tenders, metal and plastic	105	19.8	1.5	15.4	21	2
Plating and coating machine setters, operators, and tenders, metal and plastic ¹	65	21.8	2.0	20.3	14	1
Rolling machine setters, operators, and tenders, metal and plastic ¹	49	11.2	3.3	32.7	6	2
Tool and die makers ¹	130	4.7	2.5	25.1	6	3
Tool grinders, filers, and sharpeners¹	29	7.7	2.6	25.9	2	1
Welding, soldering, and brazing workers	521	11.5	2.8	28.1	60	15
Welders, cutters, solderers, and brazers ¹	446	11.5	2.8	28.1	51	13
Welding, soldering, and brazing machine setters, operators, and tenders ¹	74	11.5	2.8	28.1	9	2
All other metal workers and plastic workers ¹	150	13.7	1.9	19.4	20	3
Plant and system operators	368	7.2	3.0	30.2	27	11
Power plant operators, distributors, and dispatchers	55	7.0	3.0	29.9	4	2
Nuclear power reactor operators ¹	4	7.0	3.0	29.9	(²)	(²)
Power distributors and dispatchers ¹	15	7.0	3.0	29.9	1	(²)
Power plant operators ¹	36	7.0	3.0	29.9	3	1
Stationary engineers and boiler operators ¹	57	7.6	2.8	27.8	4	2
Water and liquid waste treatment plant and system operators ¹	88	7.0	3.1	31.5	6	3
Miscellaneous plant and system operators	167	7.0	3.0	30.4	12	5

See footnotes at end of table.

Table 11. Total and net replacement rates and annual average replacement needs, 2000-10 — Continued

(Numbers in thousands)

2000 Matrix occupation	Total employment, 2000	Replacement rate (Percent)			Annual average replacement needs, 2000-10	
		Total, 1999-2000	Net, 2000-10		Total	Net
			Annual average	10-year		
Chemical plant and system operators ¹	71	7.0	3.0	30.3	5	2
Gas plant operators ¹	12	7.0	3.0	30.4	1	(²)
Petroleum pump system operators, refinery operators, and gaugers ¹	35	7.0	3.0	30.3	2	1
All other plant and system operators ¹	49	7.0	3.0	30.3	3	1
Printing occupations	534	11.1	2.5	25.3	59	14
Bookbinders and bindery workers	115	12.1	2.6	26.4	14	3
Bindery workers ¹	105	12.1	2.6	26.4	13	3
Bookbinders ¹	10	12.1	2.6	26.4	1	(²)
Job printers	56	10.8	2.5	25.2	6	1
Prepress technicians and workers ¹	107	11.3	2.5	24.6	12	3
Printing machine operators ¹	222	10.9	2.5	25.2	24	6
All other printing workers ¹	34	10.9	2.5	25.2	4	1
Textile, apparel, and furnishings occupations	1,317	20.4	1.9	18.9	269	25
Extruding and forming machine setters, operators, and tenders, synthetic and glass fibers ¹	41	14.2	2.5	25.1	6	1
Fabric and apparel patternmakers ¹	15	13.4	3.2	31.5	2	(²)
Laundry and dry-cleaning workers ¹	236	26.1	2.6	26.4	62	6
Pressers, textile, garment, and related materials ¹	110	17.5	1.4	13.7	19	2
Sewing machine operators	399	20.4	1.1	10.6	81	4
Shoe and leather workers and repairers ¹	19	15.0	4.0	39.7	3	1
Shoe machine operators and tenders ¹	9	20.4	0.9	9.5	2	(²)
Tailors, dressmakers, and sewers	101	18.9	2.2	22.1	19	2
Sewers, hand ¹	43	18.9	2.2	22.1	8	1
Tailors, dressmakers, and custom sewers ¹	58	18.9	2.2	22.1	11	1
Textile bleaching and dyeing machine operators and tenders ¹	37	6.8	2.0	19.7	2	1
Textile cutting machine setters, operators, and tenders ¹	38	19.2	1.7	17.1	7	1
Textile knitting and weaving machine setters, operators, and tenders ¹	70	20.4	1.6	16.1	14	1
Textile winding, twisting, and drawing out machine setters, operators, and tenders ¹	90	21.4	2.2	21.6	19	2
Upholsterers ¹	58	15.0	3.3	32.9	9	2
All other textile, apparel, and furnishings workers ¹	95	20.5	2.0	20.4	19	2
Woodworkers	409	11.0	3.7	36.8	45	15
Cabinetmakers and bench carpenters	159	5.0	3.2	31.8	8	5
Furniture finishers ¹	45	9.1	4.0	39.7	4	2
Model makers and patternmakers, wood ¹	10	9.1	4.0	39.7	1	(²)
Sawing machine setters, operators, and tenders, wood	57	16.1	3.9	39.2	9	2
Woodworking machine setters, operators, and tenders, except sawing ¹	103	14.4	4.0	40.3	15	4
All other woodworkers ¹	35	12.3	4.0	40.3	4	1
Other production occupations	3,293	16.3	2.2	22.0	538	72
Cementing and gluing machine operators and tenders ¹	36	15.1	2.4	23.5	5	1
Chemical processing machine setters, operators, and tenders	100	15.1	2.4	23.5	15	2
Chemical equipment operators and tenders ¹	61	15.1	2.4	23.5	9	1
Separating, filtering, clarifying, precipitating, and still machine setters, operators, and tenders ¹	39	15.1	2.4	23.5	6	1
Cleaning, washing, and metal pickling equipment operators and tenders ¹	20	15.1	2.4	23.5	3	(²)
Cooling and freezing equipment operators and tenders	7	13.9	1.7	17.5	1	(²)
Crushing, grinding, polishing, mixing, and blending workers	202	9.9	2.2	21.8	20	4
Crushing, grinding, and polishing machine setters, operators, and tenders ¹	44	9.9	2.2	21.8	4	1
Grinding and polishing workers, hand ¹	49	9.9	2.2	21.8	5	1
Mixing and blending machine setters, operators, and tenders ¹	109	9.9	2.2	21.8	11	2
Cutting workers	115	18.7	1.8	17.8	22	2
Cutters and trimmers, hand ¹	32	18.7	1.8	17.8	6	1
Cutting and slicing machine setters, operators, and tenders ¹	83	18.7	1.8	17.8	16	1
Etchers and engravers¹	15	13.2	2.5	25.0	2	(²)
Extruding, forming, pressing, and compacting machine setters, operators, and tenders ¹	73	16.1	2.3	23.0	12	2
Furnace, kiln, oven, drier, and kettle operators and tenders ¹	33	13.9	2.7	27.5	5	1
Helpers-Production workers ¹	525	27.2	2.5	25.1	143	13
Inspectors, testers, sorters, samplers, and weighers ¹	602	15.1	2.2	22.1	91	13
Jewelers and precious stone and metal workers ¹	43	7.7	2.6	25.9	3	1

See footnotes at end of table.

Table 11. Total and net replacement rates and annual average replacement needs, 2000-10 — Continued

(Numbers in thousands)

2000 Matrix occupation	Total employment, 2000	Replacement rate (Percent)			Annual average replacement needs, 2000-10	
		Total, 1999-2000	Net, 2000-10		Total	Net
			Annual average	10-year		
Medical, dental, and ophthalmic laboratory workers	88	7.3	2.7	27.1	6	2
Dental laboratory technicians	43	7.3	2.7	27.1	3	1
Medical appliance technicians	13	7.3	2.7	27.1	1	(²)
Ophthalmic laboratory technicians	32	7.3	2.7	27.1	2	1
Molders, shapers, and casters, except metal and plastic ¹	42	15.1	2.6	26.1	6	1
Packaging and filling machine operators and tenders	379	14.9	2.2	22.0	56	8
Painting workers	195	16.3	2.2	22.4	32	4
Coating, painting, and spraying machine setters, operators, and tenders ¹	108	16.3	2.2	22.4	18	2
Painters, transportation equipment ¹	49	16.3	2.2	22.4	8	1
Painting, coating, and decorating workers ¹	38	16.3	2.2	22.4	6	1
Paper goods machine setters, operators, and tenders ¹	123	14.2	2.0	19.5	18	2
Photographic process workers and processing machine operators	76	13.0	2.6	26.0	10	2
Photographic process workers	26	13.0	2.6	26.0	3	1
Photographic processing machine operators	50	13.0	2.6	26.0	6	1
Semiconductor processors	52	13.9	1.7	17.5	7	1
Tire builders	18	13.9	1.7	17.5	3	(²)
All other production workers ¹	549	18.4	1.8	17.9	101	10
Transportation and material moving occupations	10,088	17.7	2.3	23.5	1,782	237
Supervisors, transportation and material moving workers	357	8.8	2.1	21.5	32	8
Aircraft cargo handling supervisors ¹	10	8.8	2.1	21.5	1	(²)
First-line supervisors/managers of helpers, laborers, and material movers, hand ¹	153	8.8	2.1	21.5	14	3
First-line supervisors/managers of transportation and material-moving machine and vehicle operators ¹	194	8.8	2.1	21.5	17	4
Air transportation occupations	166	4.9	2.9	28.6	8	5
Aircraft pilots and flight engineers	117	4.7	2.3	22.9	6	3
Airline pilots, copilots, and flight engineers ¹	98	4.7	2.3	22.9	5	2
Commercial pilots ¹	19	4.7	2.3	22.9	1	(²)
Air traffic controllers and airfield operations specialists	31	6.1	4.2	42.4	2	1
Air traffic controllers ¹	27	6.1	4.2	42.4	2	1
Airfield operations specialists ¹	5	6.1	4.2	42.4	(²)	(²)
All other air transportation workers ¹	17	6.1	4.2	42.4	1	1
Motor vehicle operators	4,237	14.1	1.5	15.4	599	65
Ambulance drivers and attendants, except emergency medical technicians	15	19.7	0.8	8.1	3	(²)
Bus drivers	666	13.0	2.5	25.4	87	17
Bus drivers, school	481	13.0	2.5	25.4	63	12
Bus drivers, transit and intercity	185	13.0	2.5	25.4	24	5
Driver/sales workers and truck drivers	3,268	13.7	1.4	13.7	448	45
Driver/sales workers	402	13.7	1.4	13.7	55	6
Truck drivers, heavy and tractor-trailer	1,749	13.7	1.4	13.7	240	24
Truck drivers, light or delivery services	1,117	13.7	1.4	13.7	153	15
Taxi drivers and chauffeurs	176	20.9	0.8	8.1	37	1
All other motor vehicle operators ¹	112	14.2	1.7	16.9	16	2
Rail transportation occupations	115	9.4	4.5	44.6	11	5
Locomotive engineers and firers ¹	37	9.4	4.5	44.6	3	2
Railroad brake, signal, and switch operators ¹	22	9.4	4.5	44.6	2	1
Railroad conductors and yardmasters ¹	45	9.4	4.5	44.6	4	2
Rail yard engineers, dink operators, and hostlers	4	9.4	4.5	44.6	(²)	(²)
All other rail transportation workers	7	9.4	4.5	44.6	1	(²)
Water transportation occupations	70	7.7	3.4	34.1	5	2
Sailors and marine oilers	32	7.7	3.4	34.1	2	1
Ship and boat captains and operators	25	7.8	3.4	34.0	2	1
Ship engineers	9	7.7	3.4	34.1	1	(²)
All other water transportation workers ¹	5	7.8	3.4	34.1	(²)	(²)
Related transportation occupations	309	26.3	3.4	33.7	81	10
Bridge and lock tenders ¹	4	7.7	3.4	34.1	(²)	(²)
Parking lot attendants	117	14.2	1.7	16.9	17	2
Service station attendants	112	40.2	5.1	51.0	45	6
Traffic technicians ¹	4	20.1	3.8	38.2	1	(²)

See footnotes at end of table.

Table 11. Total and net replacement rates and annual average replacement needs, 2000-10 — Continued

(Numbers in thousands)

2000 Matrix occupation	Total employment, 2000	Replacement rate (Percent)			Annual average replacement needs, 2000-10	
		Total, 1999-2000	Net, 2000-10		Total	Net
			Annual average	10-year		
Transportation inspectors	25	10.6	2.5	24.7	3	1
All other related transportation workers ¹	46	20.1	3.8	38.2	9	2
Material moving occupations	4,833	22.0	2.9	29.3	1,063	141
Cleaners of vehicles and equipment	322	26.5	3.8	38.2	85	12
Conveyor operators and tenders	63	12.6	2.9	28.5	8	2
Crane and tower operators ¹	55	8.5	3.0	29.9	5	2
Excavating and loading machine and dragline operators ¹	76	6.2	3.0	29.7	5	2
Hoist and winch operators ¹	9	7.5	2.1	20.6	1	(²)
Industrial truck and tractor operators	635	14.4	1.4	13.9	91	9
Laborers and freight, stock, and material movers, hand ¹	2,084	24.9	3.3	33.4	519	70
Machine feeders and offbearers	182	22.3	3.5	34.7	41	6
Packers and packagers, hand ¹	1,091	22.1	2.5	25.5	242	28
Pumping station operators	32	9.6	2.8	28.1	3	1
Gas compressor and gas pumping station operators	7	9.6	2.8	28.1	1	(²)
Pump operators, except wellhead pumpers	14	9.6	2.8	28.1	1	(²)
Wellhead pumpers	12	9.6	2.8	28.1	1	(²)
Refuse and recyclable material collectors ¹	124	27.6	4.3	43.4	34	5
Tank car, truck, and ship loaders	19	12.6	2.9	28.5	2	1
All other material moving workers ¹	142	9.9	2.8	27.5	14	4

¹ One or more Current Population Survey (CPS) proxy occupations may be used to estimate CPS based data. See Chapter 2.

² Less than 500